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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,527	03/02/2007	David Jonathan Hall	703597.000000	9606
29540	7590	10/14/2009		
DAY PITNEY LLP 7 TIMES SQUARE NEW YORK, NY 10036-7311				
EXAMINER				
ELEY, JESSICA L				
ART UNIT		PAPER NUMBER		
2884				
MAIL DATE		DELIVERY MODE		
10/14/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/577,527

**Applicant(s)**

HALL ET AL.

**Examiner**

JESSICA L. ELEY

**Art Unit**

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 1-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE-US)  
Paper No(s)/Mail Date 08/19/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 1-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on June 17, 2009.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(c), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 28-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perelman et al. US 6,321,111 B1 (*Perelman*) and Ntziachristos et al. US 6,615,063 B1 (Ntziachristos).

Regarding **claim 28**, Perelman teaches an apparatus (FIG. 1A) for determining depth of a fluorophore in a turbid medium comprised within an object, said apparatus comprising:

a light source (**10**), optically coupled to a source channel (**14**) and said object (**16**), to inject light in said object at a desired point and excitation wavelength (C4 L59-60);

at least one detector channel (**18**), optically coupled to a photon detector and said object, in a backreflection geometry relative to said source channel (C4 L54-56), to acquire at least one temporal point spread function (e.g., time-resolved fluorescence signal, C5 L21-24) from a desired point of said object to determine depth of said fluorophore (C7 L8-13);

a means for spatially positioning said object relative to said channels (inherent in a device for medical imaging of internal body structures for diagnostic purposes, abstract); a depth calculator (**24**).

Perelman does not specifically teach the device having a concentration calculator. However, calculating the concentration of a fluorescing substance is a well known technique in the art of diagnostic fluorescence spectroscopy. Ntziachristos teaches that time-resolved fluorescence data can not only image intrinsic absorption and scattering but also fluorophore concentration (C11-12 L66-5). It would have been obvious to one of ordinary skill in the art at

the time the invention was made to calculate fluorophore concentration with PC (24) in the apparatus taught by Perelman since the technique of calculating fluorophore concentrations as taught by Ntziachristos is recognized as a known technique and thus part of the ordinary capabilities of one skilled in the art.

Regarding **claim 29, 31-35**, Perelman teaches the apparatus as claimed in claim 28, but does not specify a configuration, thus leaving it to one of ordinary skill to determine. The claim is obvious because a configuration wherein said source and detector channels are either in contact, free-space, in a fixed position, on a gantry/platform (obviously transparent to emission wavelengths), or independently movable, are well known configurations in the art and may be implemented with predictable results.

Regarding **claim 30**, Perelman teaches the apparatus as claimed in claim 28 wherein said channels comprise optical coupling means is an optic fiber **14**.

Regarding **claim 36**, while Perelman does not teach an embodiment where the light source utilizes more than one wavelength, the use of a multiwavelength light source would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the teachings of Ntziachristos (C12 L58-66), since as taught by Ntziachristos, imaging at two wavelengths is necessary so that accurate forward models can be created for the excitation field from the source fluorophore and emission field.

Regarding **claims 37-39**, absent some degree of criticality, using a plurality of source/detector configurations, or a plurality of source and detector elements would have been an obvious if not inherent design choice for one of ordinary skill.

Regarding **claims 40 and 41**, Perelman teaches the apparatus as claimed in claim 28 further comprising wavelength selection means (**14**) between said source and said object for selecting one or more emission/excitation wavelength (C4 L59-65).

Regarding **claim 42**, Perelman teaches the apparatus as claimed in claim 28, furthermore teachings that trans-illumination imaging/geometry operating in the time-domain is a known alternative in the prior art (C7 L30-32), and thus part of the ordinary capabilities of one skilled in the art at the time the invention was made.

Regarding **claim 43**, Perelman teaches the method as claimed in claim 15 wherein said emission intensity is obtained in a modality selected from time domain, frequency domain and continuous wave (C3 L15-18).

Regarding **claim 44**, Perelman teaches the apparatus as claimed in claim 28 furthermore, absent some degree of criticality, an additional detector channel would have been obvious to one of ordinary skill in the art especially one seeking to take advantage of a known alternative configuration such as trans-illumination was taught by Perelamn (C7 L30-32).

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSICA L. ELEY whose telephone number is (571)272-9793. The examiner can normally be reached on Monday - Friday 10:00-6:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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2884

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